

CEREAL RUST BULLETIN

Report No. 8

July 8, 1997

Issued by:

CEREAL RUST LABORATORY

U.S. DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

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- Wheat leaf rust is severe in South Dakota winter wheat fields.
- Wheat stripe rust overwintering centers were found in the Gallatin Valley of Montana.

The small grain harvest has commenced from south central Pennsylvania to southern Nebraska. Winter wheat is in good condition throughout most of the U.S. In the northern small grain area, most of the spring-sown grains are in good condition and slightly behind normal crop development. Small grains are generally in good condition in the main grain-growing area of the Red River Valley.

Wheat stem rust. There have been no new reports of wheat stem rust since the last bulletin. From the stem rust wheat collections made in late April in central Louisiana, the TPMK race was identified. This has been the most commonly identified race in most of the past 20 years.

Wheat leaf rust. In late June, leaf rust severities ranged from trace to 80% on cultivars in south and west central Nebraska varietal plots. Most of the cultivars in the south central Nebraska plots at North Platte were rusted. We expect to identify many different leaf rust races from these plots, because the cultivars have different combinations of resistance genes.

Fields of susceptible winter wheat in south central South Dakota had 50% to 80% leaf rust severities on flag leaves during the first week in July (Fig. 1). Yield losses in winter wheat could be as great as 10% in South Dakota according to preliminary estimates. The rust infections in Nebraska and South Dakota probably originated from spore inoculum sources in Oklahoma and southern Kansas.

Varietal plots of susceptible spring wheat in east central South Dakota had 50% to 80% leaf rust severities in early July. Commercial cultivars of spring wheat in fields in eastern South Dakota and North Dakota and central Wisconsin had only traces of leaf rust due to their moderate to high levels of resistance to prevailing races.

During the first week in July, light amounts of leaf rust were found in winter wheat fields and plots in central and western New York.

In early July, wheat leaf rust was severe on susceptible fall planted and spring planted cultivars growing in varietal plots in the Skagit Valley in northwestern Washington and the Palouse region of eastern Washington and northern Idaho. In commercial fields in these areas, leaf rust developed late on the winter wheat and will only cause slight damage to the crop and the spring wheat cultivars have adequate adult plant resistance to combat the rust. The preliminary leaf rust race identifications for 1997 are shown in Table 1.

TABLE 1. Wheat leaf rust races identified through July 8, 1997

isolates by state		Number of					
Prt code	Virulence formula ¹	AL	AR	GA	LA	OK	TX
CBGB	3,11			2			
MBBL	1,3,10		1	1			
MBGL	1,3,10,11		2		1		
MBNL	1,3,3ka,10,17						4
MBRL	1,3,3ka,10,11,30	10	12	5	4		10
MBRQ	1,3,3ka,10,11,18,30	3			2		
MBTL	1,3,3ka,10,11,17,30						1
MCBL	1,3,10,26						2
MCDL	1,3,10,17,26						17
MCRL	1,3,3ka,10,11,26,30						3
MCRQ	1,3,3ka,10,11,18,26,30	2			1		1
MCTL	1,3,3ka,10,11,17,26,30						2
MDBL	1,3,10,24						6
MDGL	1,3,10,11,24						1
MDRL	1,3,3ka,10,11,24,30	4					13
MFBL	1,3,10,24,26		3				2
MFDL	1,3,10,17,24,26						1
MFRL	1,3,3ka,10,11,24,26,30					1	
MFTL	1,3,3ka,10,11,17,24,26,30					1	
PNMQ	1,2c,3,3ka,9,10,18,24,30			4			1
TBBL	1,2a,2c,3,10			1			2
TDBL	1,2a,2c,3,10,24	1	2				12
TDRL	1,2a,2c,3,3ka,10,11,24,30						3
TFCL	1,2a,2c,3,10,24,26,30			1			
TFBL	1,2a,2c,3,10,24,26						2
TFGL	1,2a,2c,3,10,11,24,26						4
TGBL	1,2a,2c,3,10,16						1
TLGG	1,2a,2c,3,9,11,18			4			
Number of isolates		23	18	18	7	2	88
Number of collections		12	9	11	4	1	49

¹Single gene resistances evaluated: *Lr*1,2a,2c,3,3ka,9,10,11,16,17,18,24,26,30

Wheat stripe rust. During the first week in July, wheat stripe rust was severe on susceptible fall planted and spring planted cultivars in northwestern Washington nurseries, but since most of the commercial cultivars in this region have good adult plant resistance to stripe rust, losses will

be light. In early July, wheat stripe rust was severe on susceptible winter wheat cultivars in the Palouse region of eastern Washington and northern Idaho, but will not cause significant losses because the commercial soft white winter and spring wheats have good adult plant resistance to stripe rust.

In the first week in July, wheat stripe rust was found in overwintering centers in the Gallatin Valley of Montana. The stripe rust is expected to increase with good moisture conditions and cool weather.

Oat stem rust. There have been no new reports of oat stem rust since the May 13 bulletin. The most commonly identified oat stem rust is NA-27, which has been true in previous race surveys (Table 2).

TABLE 2. Oat stem rust races identified through July 7, 1997

State	Number of		Number of isolates per state		
	collections	isolates	NA-10*	NA-16	NA-27
Alabama	3	9			9
California	1	3	3		
Florida	4	12			12
Louisiana	4	12		4	8
Mississippi	2	6		3	3
Texas	10	29			29
Total	24	71	3	7	61

*Virulence formula (Avirulence / Virulence):

NA-10 1,4,8,9,13,16,a/2,3,15

NA-16 2,4,9,13,15,16,a/1,3,8

NA-27 9,13,15,16,a/1,2,3,4,8

Oat crown rust. In early July, trace to light levels of oat crown rust were detected in a few fields in north central Kansas, southern Minnesota, central Wisconsin, and south central Pennsylvania. Crown rust is developing slowly due to cool weather in the northern plains.

By June 30, crown rust infection was severe (50-80%) on susceptible oat cultivars near the buckthorn nursery on the University of Minnesota, St. Paul campus. Cool weather over the past week has delayed further buildup.

In early July, 10% severities were found on lower leaves of susceptible oat cultivars in eastern South Dakota varietal plots.

TABLE 3. Incidence of virulence in 1997 crown rust isolates tested to date (7/2/97)

Differential	Percent of isolates virulent			
	GA,AL,MS	LA	TX	CA
Pc 14	89	86	90	67
Pc 35	22	21	43	17
Pc 36	11	57	24	17
Pc 38	44	43	57	17
Pc 39	0	29	43	17
Pc 40	100	93	95	67
Pc 45	0	7	10	67
Pc 46	11	21	57	67
Pc 48	11	0	0	33
Pc 50	22	36	52	0
Pc 51	33	64	100	17
Pc 52	0	0	5	17
Pc 53	0	0	0	0
Pc 54	0	14	10	67
Pc 55	0	29	38	17
Pc 56	11	57	24	17
Pc 57	22	14	48	50
Pc 58	0	0	5	17
Pc 59	0	36	29	17
Pc 60	67	79	86	17
Pc 61	100	93	76	17
Pc 62	0	7	0	0
Pc 63	0	21	38	17
Pc 64	0	7	0	0
Pc 67	0	57	24	50
Pc 68	0	0	0	0
Pc 70	0	36	48	17
Pc 71	0	36	48	17
No. of isolates	9	14	21	6

Barley stem rust. There have been no new reports of barley stem rust since May 19th when it was found in plots in south Texas.

Barley leaf rust. In early July, barley leaf rust was severe on susceptible fall planted and spring planted cultivars growing in varietal plots in the Skagit Valley of western Washington. The spring planted barley cultivars are all susceptible to leaf rust.

Stripe rust on barley. By the first week in July, severe barley stripe rust was found on susceptible fall planted and spring planted cultivars growing in varietal plots in the Skagit Valley of western Washington. Light amounts of barley stripe rust were detected in the Palouse region of the Pacific Northwest.

Rye rusts. In late June, 40% rye leaf rust severities were reported in a plot in east central South Dakota. No rye stem rust has been reported in the U.S. this year.

Stem rust on barberry. There have been no new reports of stem rust on barberry since the last bulletin.

Rust on other grasses. During the first week in July, stem rust was found on quackgrass (*Elytrigia repens*) and redtop (*Agrostis alba*), that was growing within 30 meters of the common barberry (*Berberis vulgaris*) in southeastern Minnesota.

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